

REMARKS/ARGUMENTS

Formal drawings are being submitted with this paper including corrections to matters of form as indicated in the Notice of Draftsperson's Patent Drawing Review.

Claims 1-26 had been withdrawn in an earlier paper as the result of an earlier restriction requirement. In view of the Examiner's earlier restriction requirement, applicant retains the right to present claims 1-26 in a divisional application.

The Examiner rejected as obvious (35 U.S.C. §103) pending claims 27-30, 37-40, and 47-50 as being unpatentable over Tirfing (US 5,129,082). Additionally, the Examiner rejected as obvious (35 U.S.C. §103) pending claims 31-36, 41-46, and 51-56 as being unpatentable over Tirfing (US 5,129,082) and Huang (US 6,026,406). Applicants traverse the rejection of the pending claims 27-56 for the reasons discussed below.

1) Claims 27, 37, and 47

Independent claims 27, 37, and 47 disclose a system, method, and program for updating an index on a database table when data is added to the table, comprising:

receiving data records to load into the table;

selecting one of a first operation and second operation, wherein the first operation incrementally updates the index on the table as each received data record is added to the table and the second operation rebuilds the index from the table after all the received data records have been added to the table; and

using the selected first operation or second operation to update the index with the received data. for updating an index on a database table when data is added to the table. Data records are received records to load into the table.

The Examiner rejected as obvious (35 U.S.C. §103) pending claims 27, 37, and 47 as being unpatentable over Tirfing (US 5,129,082). The cited Tirfing (col. 2: lines 37-40, lines 48-

52; lines 60-64; col. 3: lines 28-32; col. 9: lines 18-24; col. 11: lines 5-18; col. 13: lines 25-30, lines 40-45) discusses a system where an index is associated with data records. In the cited Tirfing, when additional data records are added to the existing data records, instead of updating the existing index, an additional index corresponding to the added data records is generated (col. 13: lines 25-30, lines 40-45).

The claims require selecting one of a first operation and second operation, wherein the first operation incrementally updates the index on the table as each received data record is added to the table and the second operation rebuilds the index from the table after all the received data records have been added to the table, wherein the selected first operation or second operation is used to update the index with the received data. Nowhere does the cited Tirfing teach or suggest selecting between incrementally updating the index as each data record is added or rebuilding the index after all data records have been added as required by the claims. Instead, in the cited Tirfing, when a data record is added an additional index corresponding to the added data is generated (col. 13: lines 25-30, lines 40-45). In contrast, the claims require selecting between incrementally updating the index or rebuilding the index.

The Examiner cites col. 2, lines 60-64 of Tirfing as discussing the selection between two operations for updating an index. The operations referred to in col. 2, lines 60-64 of Tirfing are for the hashing of source files to database component files to generate unique names for the database component files. In contrast, the operations required by the claims are for selecting between incrementally updating the index as each data record is added or for rebuilding the index after all data records have been added, and the cited Tirfing does not teach or suggest the claim requirements.

The Examiner further mentions that the claim requirement of selecting between the first operation and a second operation is not explicitly discussed in Tirfing but could be arrived at by modifying Tirfing (office action, page 3; Tirfing: col. 13: lines 25-30). Col. 13, lines 25-30 of

Tirfing merely discusses efficient updates and does not teach or suggest the specific operations to update or rebuild an index as required by the claims.

The Examiner has made references to heuristics for selecting between index operations in the course of his arguments for rejecting the claims (Office Action: Page 3). However, the heuristic methods discussed in Tirfing (col. 2, lines 61-63) are not for selecting between index update operations or index rebuilding operations as required by the claims. Tirfing discusses heuristics for selecting hash values. Therefore, the cited Tirfing does not teach or suggest the claim requirement of selecting between incrementally updating the index as each data record is added or for rebuilding the index after all data records have been added.

For the above reasons, pending independent claims 27, 37, and 47 are patentable over the cited Tirfing because the cited Tirfing does not teach or suggest all the claim limitations. Nor can the cited Tirfing be modified to arrive at all the claim limitations.

2) Claims 28-36, 38-46, 48-56

The Examiner has also rejected pending claims 28-36, 38-46 and 48-56 that depend directly or indirectly on the pending independent claims 27, 37, and 47 respectively. Applicants submit that these claims are patentable over the cited art because they depend from claims 27, 37, and 47 respectively which are patentable over the cited art for the reason discussed above, and because the combination of the limitations in the dependent claims 28-36, 38-46, 48-56 and the base and intervening claims from which they depend provide further grounds of distinction over the cited art

3) Claims 28, 38, and 48

Pending claims 28, 38, and 48 depends from claim 27, 37 and 47 respectively and further require determining which of the first operation or second operation is more efficient, wherein

the first or second operation determined to be more efficient is the selected operation used for updating the index with the received data.

The cited Tirfing (col. 2: lines 54-65) discusses how source files are hashed to unique database component file names. Nowhere does the cited Tirfing teach or suggest the claim requirement of determining which of the first operation or second operation is more efficient, wherein the first or second operation determined to be more efficient is the selected operation used for updating the index with the received data.

For the above reasons, pending independent claims 28, 38, and 48 are patentable over the cited Tirfing because the cited Tirfing does not teach or suggest all the claim limitations.

4) Claims 29, 39, and 49

Pending claims 29, 39, and 50 depends from claim 28, 38 and 48 respectively and further require determining which operation is more efficient is a function of a percentage of the received data records to add to the table and characteristics of the index.

The cited Tirfing (col. 2, lines 45-67) discusses how source files are hashed to unique database component file names, where the hash value is based on a heuristic method. Nowhere does the cited Tirfing teach or suggest the claim requirement of determining which operation is more efficient is a function of a percentage of the received data records to add to the table and characteristics of the index.

For the above reasons, pending dependent claims 29, 39, and 49 are patentable over the over the cited Tirfing because the cited Tirfing does not teach or suggest all the claim limitations.

5) Claims 32, 42, and 52

Pending claims 32, 42, and 52 depends from claims 28, 38, and 48 respectively and further require determining which operation is more efficient further comprises considering at least one of a following factors: an estimated time required to extract index keys from the table,

an estimated time to sort the index keys, and an estimated time to rebuild the index from the sorted keys.

The Examiner acknowledges that Tirfing does not teach or suggest the claim requirement of determining which operation is more efficient further comprises considering at least one of a following factors: an estimated time required to extract index keys from the table, an estimated time to sort the index keys, and an estimated time to rebuild the index from the sorted keys.

To overcome the shortcomings of Tirfing the Examiner cites Huang (abstract, col. 3: lines 40-45; col. 7: lines 17-25, lines 38-42, lines 49-60; col. 8: lines 1-30; col. 6: lines 8-15 and lines 58-63) as discussing an estimated time for index keys, estimated time for sorting the index keys and estimated time to rebuild the index from the sorted keys. However, the cited Huang does not teach or suggest the claim requirement of determining which operation is more efficient.

The Examiner combines the cited Huang and the cited Tirfing to arrive at the claim requirement of determining which operation is more efficient further comprises considering at least one of a following factors: an estimated time required to extract index keys from the table, an estimated time to sort the index keys, and an estimated time to rebuild the index from the sorted keys. The Examiner motivates the combination by mentioning that the index updating methods of Huang could be applied to the index updates in a database table environment. However, nowhere does the cited Huang or the cited Tirfing provide any motivation for the combination. In particular, nowhere does the cited Huang or the cited Tirfing teach or suggest the claim requirement of determining which operation is more efficient.

For the above reasons, pending dependent claims 32, 42, and 52 are patentable over the combination of Huang and Tirfing because the cited combination does not teach or suggest all the claim limitations.

6) Claims 33, 43, and 53

Pending claims 33, 43, and 53 depends from claims 28, 38, and 48 respectively and further require maintaining a list of threshold values for different index sizes and using the number of received data records to add to the table to determine a comparison value, wherein determining whether the first or second operation is more efficient is based on the comparison value and the threshold for the size of the index to be updated.

The Examiner as rejected claims 33, 43, and 53 based on a combination of Tirfing and Huang (abstract, col. 3: lines 40-45; col. 7: lines 17-25, lines 38-42, lines 49-60; col. 8: lines 1-30; col. 6: lines 8-15 and lines 58-63). The cited Huang is a method of batch processing of updates to indexes. Nowhere does the cited Huang or the cited Tirfing teach or suggest determining whether the first or second operation is more efficient is based on the comparison value.

For the above reasons, pending dependent claims 33, 43, and 53 are patentable over the combination of Huang and Tirfing because the cited combination does not teach or suggest all the claim limitations.

7) Claims 36, 46, and 56

Pending claims 36, 46, and 56 depend from claims 33, 43, and 53 respectively and further require that the first operation is more efficient if the comparison value is less than the threshold value and wherein the second operation is more efficient if the comparison value is greater than the threshold value.

Nowhere does the cited Huang (col. 3: lines 35-38) or the cited Tirfing teach or suggest the claim requirement that the first operation is more efficient if the comparison value is less than the threshold value and wherein the second operation is more efficient if the comparison value is greater than the threshold value. Nowhere does the cited Huang or the cited Tirfing teach or suggest determining whether the first or second operation is more efficient is based on the comparison value

For the above reasons, pending dependent claims 36, 46, and 56 are patentable over the combination of Huang and Tirfing because the cited combination does not teach or suggest all the claim limitations.

Conclusion

For all the above reasons, Applicant submits that the pending claims 27-56 are patentable over the art of record. Applicants have not added any claims. Nonetheless, should any additional fees be required, please charge Deposit Account No. 50-0585.

The attorney of record invites the Examiner to contact him at (310) 553-7977 if the Examiner believes such contact would advance the prosecution of the case.

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